



" Prevalence of Dermoscopic signs in Egyptian psoriatic patients with different skin phototypes and different plaque locations "

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Abstract

Introduction:

As a non-invasive, simple diagnostic tool, Dermoscopy is currently used for the diagnosis and follow-up of many skin diseases (*Tosti et al., 2010*), giving a good visualization of skin surface and underlying structures (*Soyer et al., 2001*). It provides data about many inflammatory skin diseases e.g. psoriasis, lupus, and so on (*Agozzino et al., 2013*).

Inflammatory skin diseases may share clinical signs. Although dermoscopy may not be 'diagnostic', it helps to decrease the differential diagnosis range. In general dotted and glomerular vessels are the main vascular pattern in inflammatory skin diseases (*Bowling, 2012*).

Psoriasis is a skin autoimmune disease with unknown course, morphology and prognosis, affecting about 1.5% of the mankind (*Langley et al., 2005*). Clinically the lesions are sharply demarcated, erythematous with silver scales (*Sabat et al., 2007*). The dermoscopic patterns of dotted vessels regularly distributed with the presence of whitish scale can confirm the diagnosis (*Zalaudek, 2012*).

According to *Pan et al. (2008)*, the significant signs for psoriasis were a homogeneous red dots, erythematous background and silver scales. If all these signs were present it makes the diagnostic probability of 99%. The arborizing vessels was strong negative signs in differentiating psoriasis from other diseases .

Each dermoscopic sign has the corresponding histopathological changes. Regularly, red dots with homogeneous pattern correspond to dermal papilla filling with dilated vessels in dermo-epidermal junction. Erythematous background corresponds to dermal inflammation. Silver scales correspond to hyperkeratosis, parakeratosis in stratum corneum (*Agozzino et al., 2013*).

Aim of the work:

Assess the percentage of each dermoscopic sign and hence emphasizing its importance in diagnosis of psoriatic patients.

Methodology:

The patients included in this study were selected from the out-patient clinic of dermatology, venereology and andrology department, Mansoura University hospital in the period between May 2014 and August 2015. This study included 218 Egyptian patients of classic Psoriasis. An informed consent was taken before inclusion of patients into the study.

All patients underwent medical history taking, dermatological examination including skin phototype and documented digital photography and dermoscopic examination. In case of dry, scaly lesions we used isopropyl alcohol 70% gel.

Materials:

- 1- The dermoscopy used: Dermlite 3 (3Gen, USA).
- 2- An attachment piece (Sony adapter)
- 3- The Cyber-shot model DSC-W620 by Sony

Data management and statistical analysis:

Data was analyzed using (Statistical Package for Social Sciences) SPSS version 15. Qualitative data was presented as number and percent. Comparison between groups was done by Chi-Square test. Quantitative data was presented as mean \pm SD. Student t-test was used to compare between two groups. Non parametric data was presented as min – max and median. Mann-Whitney test was used for comparison between groups. $P < 0.05$ was considered to be statistically significant.

RESULTS

218 Egyptians cases with different age groups included in the study the youngest case aged 6 months and oldest was 70 years old, divided to 111 female and 107 male.

All cases were classic straight-forward psoriasis diagnosed clinically according to *Sabat et al., (2007)*, as the lesions clinically are sharply demarcated, red in color and slightly raised, with silver scale. Patients under treatment at the time of the study or recently before and suspicious cases were excluded.

Dermoscopic signs found in psoriasis were bushy capillaries (dotted vessels), erythema and scales.

Bushy capillaries presented in 99.5% of all cases, erythema presented also in 99.5% and scales presented in 92.7%. We did not find bushy capillaries and erythema in

only one male patient 29 years old with palmoplantar psoriasis for 6 years ago, due to thick scales.

Table 1 percentage of each dermoscopic signs in psoriasis:

Dermoscopic Sign	Number (total 218 cases)	Percentage (%)
Bushy capillaries	217	99.5%
Erythema	217	99.5%
Scales	202	92.7%



Figure 1. Male Patient 52y with psoriasis vulgaris. Dermoscopic picture show bushy capillaries (black arrow) (numerous and uniformly distributed), erythema and scales (blue arrow).

Table 2. Effect of skin phototype on dermoscopic finding in psoriasis:

Dermoscopic Sign	Skin phototype	1 n=1	2 n=31	3 n=134	4 n=47	5 n=3	6 n=2	P value
Bushy capillaries		1(100.0%)	31(100.0%)	133(99.3%)	47(100.0%)	3(100.0%)	2(100.0%)	0.987
Erythema		1(100.0%)	31(100.0%)	133(99.3%)	47(100.0%)	3(100.0%)	2(100.0%)	0.987
Scales		1(100.0%)	26(83.9%)	127(94.8%)	43(91.5%)	3(100.0%)	2(100.0%)	0.419

Skin Phototype has no or little effect on dermoscopic finding in psoriasis. Table 2 shows that there is no significant effect of skin color on visibility of the bushy capillaries, erythema or scales.

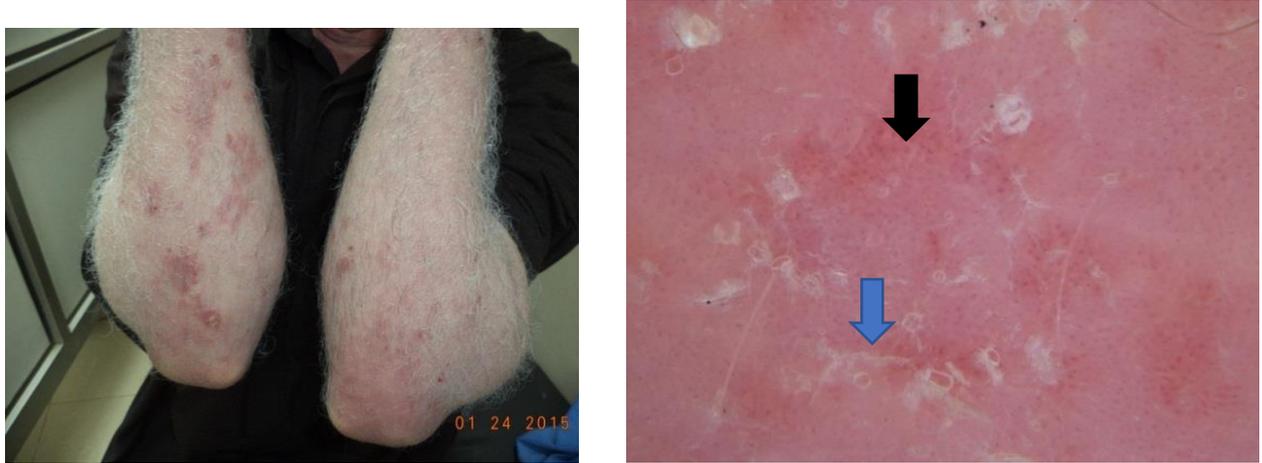


Figure 2 Male Patient 56 years old with skin phototype 1. Dermoscopic examination showing clear bushy capillaries (black arrow), erythema and scales (blue arrow).



Figure 3. Male Patient 48 years old with skin phototype 5. Dermoscopic examination showing clear bushy capillaries , erythema and scales with no effect of skin color.

Type and site of psoriasis have no effect on erythema but have significant effect on scales especially flexural psoriasis due to humidity. Thick stratum corneum of palm and sole make it more difficult to detect bushy capillaries, also bushy capillaries arranged in lines due to dermatoglyphics.

Table 3. Effect of type and site of psoriasis on Dermoscopic signs:

Dermoscopic Sign	Ps. Vulgaris n=120	Flexural Ps. n=38	Palmoplantar Ps n=42	Scalp Ps. n=18	P value
Bushy capillaries	120(100.0%)	38(100.0%)	41(97.6%)	18(100.0%)	0.240
Erythema	119(99.2%)	38(100.0%)	42(100.0%)	18(100.0%)	0.845
Scales	117 (97.5%)	26(68.4%)	41(97.6%)	18(100.0%)	<0.001

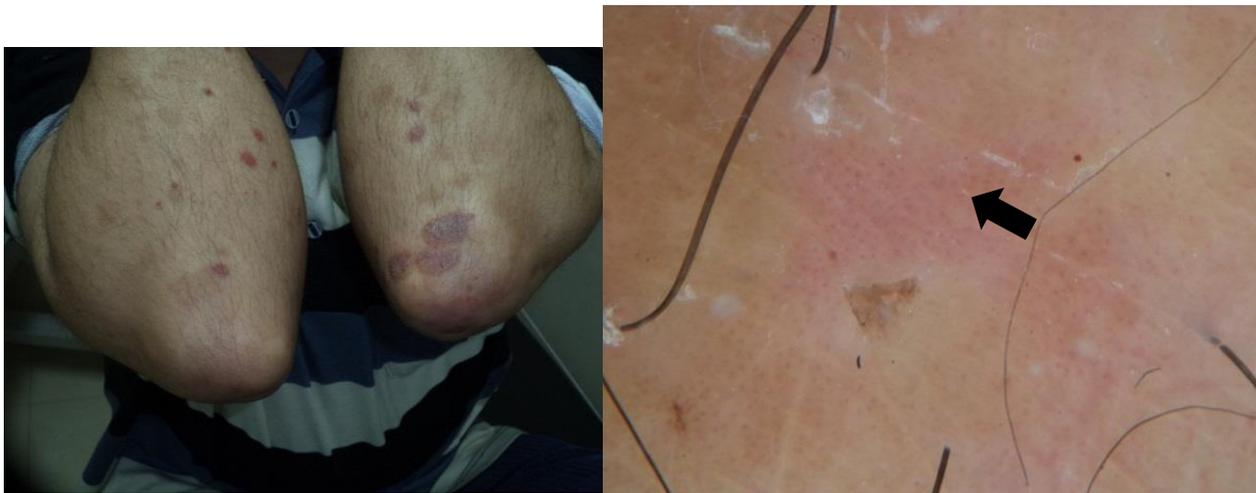


Figure 4. Male patient 20 years old with psoriasis vulgaris. Dermoscopic examination shows bushy capillaries (black arrow), erythema and scales (blue arrow)



Figure 5. Five months male baby with flexural psoriasis. Dermoscopic examination shows bushy capillaries, erythema and no scales.



Figure 6. Female patient 7years old with scalp psoriasis. Dermoscopic examination shows bushy capillaries, erythema and scales.



Figure 7. Male patient 9 years old with palmer psoriasis. Dermoscopic examination shows bushy capillaries arranged in lines, erythema and scales

Discussion:

Bushy capillaries, erythema and scales were the well-established dermoscopic findings studied in this research. We found bushy capillaries in 217 cases of 218 cases (99.5%), erythema also in 217 cases of 218 cases (99.5%) and scales in 202 cases of 218 cases (92.7%).

According to Lallas et al. (2012), dermoscopic findings in psoriasis were; 83 cases of 83 cases (100.0%) showed dotted vessels and 73 cases of them with regular distribution, 82 cases of 83 cases (98.7%) showed erythema and 60 cases of 83 cases(72.2%) showed scales.

According to Pan et al. (2008), homogeneous distributed red dots and light-red background, yielding a high diagnostic probability.

In palmoplantar psoriasis, we detected dotted capillaries arranged in lines due to dermatoglyphics in 41 cases of 42 cases (97.6%).

According to Yu et al. (2021) in study included 26 cases of palmoplantar psoriasis and 31 cases of palmoplantar eczema, they found that white scales and regular arrangement of dots were significantly diagnostic of psoriasis, but yellowish scales with irregular arrangement of atypical vessels were significantly diagnostic of eczema.

In one case, the dermoscopic features of palmoplantar psoriasis showed a flower-like shape in sites without scales (Martinez-Rico et al., 2020), but this study included just one case so cannot be generalized and need to be confirmed with other studies with large number of cases .

According to Okada et al. (1991), dermoscopy in palmoplantar psoriasis showed in all examined fields at magnification (X50) the presence of pinpoint-like capillaries linearly arranged along the furrows of dermatoglyphics.

We demonstrated that, thick skin of palm and sole and presence of hyperkeratosis make it more difficult to detect bushy capillaries. In agreement, a major problem in palm and sole interfering with a dermoscopy evaluation, is multiple layers of hyperkeratosis that obscures the vascular pattern (De Angelis et al., 2002).

We found that, type and site of psoriasis have little or no effect on erythema but have significant effect on scales especially flexural psoriasis due to humidity.

In open study on 12 cases with different types of balanitis, only patients with psoriatic balanitis (biopsy-proven) showed the “bushy” capillaries (Micali et al., 2019).

We also showed that, skin phototype has no or little effect on dermoscopic finding in psoriasis as there is no significant effect of skin color on visibility of the bushy capillaries, erythema or scales

According to Nwako-Mohamadi et al. (2019), in a study with 90 patients dermoscopic features in dark skin are mostly similar to those in light skin.

Summary and Conclusion:

Dermoscopy forms the link between macroscopic clinical dermatology and microscopic dermatopathology. The well-known dermoscopic criteria of psoriasis, namely bushy capillaries, erythema and scaling are seen in dark skin as well as in those in light skin, in lesions of different locations, with the frequency of white scales varying among different body sites.

Limitation and recommendations :

There are some limitations to the present study. First, this study included only classic cases of psoriasis so more studies may be needed with histopathological confirmation in more challenging and suspicious cases. Second, we did not make comparison between different age groups or gender so more studies needed to clarify the differences according to patient age and gender, and so adding comparison between pediatric, adults and elderly population, as well as females versus males' comparison, regarding the dermoscopic findings.

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